

DIGITAL SOCIAL INCLUSION AND HUMAN CAPITAL IN SHAPING NATIONAL WELL-BEING: EVIDENCE FROM VIETNAM'S MARKET-ORIENTED TRANSITION

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ABSTRACT

This paper examines how digital social inclusion and human capital jointly shape national well-being in transitional economies. Existing studies often treat digital inclusion as access to technology and human capital as an individual productivity asset, overlooking their structural interaction. Addressing this gap, the study develops a dialectical institutional framework that conceptualizes both mutually constitutive and institutionally mediated processes. Using structured narrative review with abductive elements and secondary evidence from Vietnam, the analysis shows that digital expansion does not automatically translate into inclusive well-being. Instead, outcomes depend on the alignment between digital participation, capability formation, and institutional inclusiveness. The findings highlight a dual dynamic: digital inclusion and human capital can reinforce each other but may also generate asymmetrical and stratifying effects under uneven institutional conditions. By reframing national well-being as a relational and conditional outcome, the paper contributes a theoretically integrated approach to human-centered digital transformation in emerging economies.

Keywords: Digital social inclusion, human capital, national well-being, institutional transformation, inclusive development, Vietnam.

1. INTRODUCTION

1.1. Context: Digital Transformation and Transitional Economies

Digital transformation has become a central driver of contemporary economic and social restructuring, reshaping production systems, labor markets, and patterns of social participation across both advanced and emerging economies. The rapid diffusion of digital technologies has significantly expanded connectivity, with global internet penetration exceeding two-thirds of the population, while digital sectors contribute an increasing share to economic output [1], [2]. In emerging economies, digitalization is often framed as a pathway for accelerated development through technological leapfrogging.

Within this global context, Vietnam represents a notable case of a transitional, market-oriented economy undergoing rapid digital expansion alongside sustained economic growth. Internet penetration has surpassed 75% of the population, while the digital economy is projected to account for a growing proportion of national GDP in the coming years [1], [3]. State-led initiatives, particularly the National Digital Transformation Program, have further accelerated the integration of digital technologies into key sectors, including finance, education, and public administration.

However, the expansion of digital infrastructure and aggregate economic growth does not necessarily translate into inclusive societal outcomes. Persistent disparities in access, digital skills, and effective participation remain evident across regions and social groups, particularly in transitional institutional contexts characterized by structural asymmetries and uneven development trajectories [4], [5].

1.2. Problem Statement: Beyond Growth and Technological Expansion

The prevailing assumption that digital transformation inherently enhances national well-being has increasingly been challenged. While digital technologies can foster productivity gains and expand access to information, their benefits are unevenly distributed, often reinforcing existing socio-economic inequalities [6]. The persistence of digital divides - encompassing not only access but also skills and usage - suggests that technological expansion alone is insufficient to ensure inclusive development.

Similarly, economic growth driven by digitalization does not automatically translate into improvements in human well-being. As highlighted by Sen [7], development should be understood not merely as income expansion but as the enhancement of human capabilities and freedoms. In this sense, the relationship between digital transformation and well-being is contingent upon broader social and institutional conditions.

In transitional economies such as Vietnam, these tensions are particularly pronounced. Rapid digital adoption coexists with structural constraints in human capital formation, regional disparities, and institutional limitations, raising critical questions about the conditions under which digital transformation contributes to collective welfare.

1.3. Literature Gap: Fragmented Approaches to Development

Despite growing scholarly attention, existing literature remains fragmented in its treatment of the relationship between digital inclusion, human capital, and well-being. Studies on digital inclusion have primarily focused on access to information and communication technologies, often conceptualizing inclusion in infrastructural terms while neglecting deeper dimensions of meaningful participation [8].

In parallel, human capital literature has traditionally emphasized education and productivity, treating skills as individual assets that contribute to economic growth [9]. While recent research acknowledges the importance of digital skills, it often overlooks the institutional and structural factors that shape human capital development.

Meanwhile, research on national well-being has expanded beyond GDP to incorporate multidimensional indicators such as health, education, subjective life satisfaction, and broader quality-of-life conditions [10], [11]. As a result, the interaction between digital inclusion and human capital in shaping well-being remains under-theorized, particularly within the context of transitional economies.

1.4. Research Objective: Toward an Integrated Framework

Addressing these gaps, this study aims to develop an integrated theoretical framework that explains how digital social inclusion and human capital interact to shape national well-being within transitional institutional environments. Rather than treating these elements as independent variables, the study conceptualizes them as interdependent and mutually constitutive processes embedded within broader socio-economic structures.

Drawing on a qualitative research design based on theoretical synthesis and secondary data analysis, the study integrates insights from digital inequality research, human capital theory, and inclusive development scholarship. Empirical grounding is provided through the case of Vietnam, where rapid digitalization intersects with ongoing structural transformation.

1.5. Contribution: Theoretical Integration and Contextual Insight

This study makes three distinct contributions to the literature on digital transformation and development.

First, it reconceptualizes digital inclusion as *institutionally mediated social participation* rather than mere technological access. By shifting the analytical focus from connectivity to capability and participation, the study challenges access-based approaches that dominate existing research on the digital divide.

Second, it reframes human capital as a *relational and institutionally embedded capability* instead of an individual productivity asset. This perspective extends conventional human capital theory by emphasizing the role of institutional structures in shaping the formation and utilization of skills in digitally mediated economies.

Third, the study develops a *dialectical institutional framework* that explains both the complementary and contradictory interactions between digital inclusion and human capital in shaping national well-being. Unlike linear models of digital development, this framework highlights the conditional and asymmetrical nature of their relationship, particularly in transitional economies.

Together, these contributions provide a theoretically integrated and contextually grounded approach to understanding how digital transformation affects inclusive development in the Global South.

2. LITERATURE REVIEW

Digital transformation has generated a vast interdisciplinary literature, yet this body of work remains conceptually fragmented. One strand focuses on digital inclusion but often reduces it to technological access; another examines human capital primarily as an individual productivity asset; a third explores well-being as a macro-level outcome detached from the processes through which individuals acquire capabilities and participate in digital life. The central issue, therefore, is not a lack of research, but the absence of an integrated framework capable of explaining how these domains interact under specific institutional conditions.

Early studies on the digital divide established that access to information and communication technologies is unevenly distributed. However, an access-based perspective is no longer sufficient. As digital infrastructures expand, inequality becomes more layered rather than diminishing. Van Dijk argues that access represents only the first threshold, with inequalities emerging in skills, usage, and the ability to convert digital engagement into social advantage [6]. Helsper further demonstrates that digital inequalities are embedded within broader social structures, including education, income, and institutional support [12]. The implication is clear: connectivity cannot be equated with inclusion, as meaningful participation depends on the capacity to translate access into substantive opportunities.

This perspective challenges the dominant technocratic narrative of digital transformation. Expanding broadband networks and digital platforms does not necessarily reduce exclusion, as disparities in literacy, institutional responsiveness, and labor market absorption may persist. Castells' concept of the network society highlights that digital networks reorganize power and opportunity around those already positioned to benefit [8]. Digital transformation should therefore be understood not as a neutral technological process, but as a restructuring dynamic that redistributes both opportunities and vulnerabilities, particularly in transitional economies where institutional equalization remains uneven.

A similar limitation is evident in human capital literature. Becker's formulation of education as an investment in productivity remains influential [9], yet it primarily

conceptualizes human capital as an individual stock of skills. In digitally mediated economies, however, the value of skills is increasingly shaped by institutional contexts, including education systems, digital infrastructure, and labor market structures. Where these conditions are uneven, human capital formation cannot be understood solely as private investment, but must be seen as a socially conditioned and institutionally mediated process.

The capability approach provides a necessary extension. Sen's framework reconceptualizes development as the expansion of substantive freedoms rather than income growth [7]. From this perspective, skills matter not only for productivity but for enabling individuals to access services, participate in networks, and exercise agency in digital environments. This shift from a productivity-centered to a capability-centered view is essential for understanding how human capital interacts with digital inclusion in shaping well-being outcomes.

The literature on well-being introduces a further corrective by moving beyond GDP as a sufficient measure of progress. The Stiglitz-Sen-Fitoussi Commission emphasizes that development must account for quality of life, inequality, and sustainability [10], while OECD frameworks highlight the multidimensional nature of welfare [11]. However, this literature often remains disconnected from the mechanisms of digital transformation. Well-being is typically treated as an outcome, while digital participation and skill formation are analyzed separately, obscuring the increasingly digital pathways through which welfare is produced.

Across these literatures, the core limitation is theoretical separation. Digital inclusion research recognizes that access is insufficient but often does not explain how unequal participation translates into developmental outcomes. Human capital theory explains the importance of skills but underplays institutional mediation. Well-being research broadens the concept of development but lacks mechanisms linking macro outcomes to digital and educational processes. What remains underdeveloped is an integrated account of how digital inclusion and human capital interact, and how this interaction is conditioned by institutional arrangements.

This gap is particularly significant in transitional economies, where digitalization unfolds within historically uneven structures characterized by regional disparities, unequal access to education, and variable institutional capacity. Under these conditions, digital expansion may produce contradictory effects: it can broaden access while reinforcing existing advantages, expand state reach while leaving participation unequal, and create new economic opportunities while intensifying exclusion for those lacking adaptive skills. Linear models are insufficient to capture these dynamics.

Accordingly, this study advances a dialectical institutional perspective on the relationship between digital inclusion, human capital, and national well-being. Digital transformation is neither inherently inclusive nor exclusionary; its outcomes depend on how institutions mediate the relationship between access, capability formation, and participation. Digital inclusion enhances well-being only when individuals can convert connectivity into meaningful opportunities, while human capital contributes to inclusion only when institutional systems distribute capabilities broadly. Where such conditions are absent, their interaction may reinforce stratification rather than inclusion.

The contribution of this literature review, therefore, is not to restate adjacent strands of research, but to demonstrate the necessity of integrating them into a unified analytical framework. National well-being in the digital age cannot be explained by infrastructure, education, or macro indicators in isolation. It must be understood as a contingent outcome of institutional processes through which digital inclusion and human capital interact, reinforce, and at times contradict one another. This study builds that integrated framework and grounds it in the context of Vietnam as a transitional economy undergoing rapid digital transformation.

3. THEORETICAL FRAMEWORK

The preceding review demonstrates that existing scholarship, while rich in empirical insights, remains analytically fragmented. Digital inclusion is often reduced to access, human capital to productivity, and well-being to aggregated outcomes. What remains underdeveloped is a theoretical framework capable of explaining how these dimensions interact within specific institutional contexts. This study addresses this gap by advancing a dialectical institutional framework, in which digital inclusion and human capital are conceptualized as mutually constitutive processes whose effects on national well-being are mediated by institutional structures.

3.1. From Linear Causality to Dialectical Interaction

Conventional models of development tend to assume linear causality: improvements in digital access lead to enhanced skills, which in turn generate economic growth and, ultimately, improved well-being. Such models implicitly treat digital transformation as a neutral and cumulative process. However, this linearity obscures the contradictory dynamics through which digitalization unfolds in real socio-economic contexts.

A dialectical perspective challenges this assumption by emphasizing that development processes are inherently relational and often characterized by tension, asymmetry, and uneven outcomes. As Sen [7] argues, development should be understood as the expansion of capabilities, but such expansion is contingent upon the social and institutional conditions that enable individuals to convert resources into real freedoms. Similarly, institutional theory highlights that economic outcomes are not determined solely by resource endowments but by the rules, norms, and governance structures that shape their distribution and use [13].

Within this perspective, digital inclusion and human capital cannot be treated as independent variables in a causal chain. Rather, they interact dynamically, reinforcing or constraining each other depending on institutional configurations. Digital access may enable skill acquisition, but without adequate educational systems and labor market integration, such access may remain superficial. Conversely, human capital formation may enhance digital participation, but without inclusive digital infrastructures, its effects may be unevenly realized.

3.2. Digital Inclusion as Social Participation

Building on the critique of access-based approaches, this study conceptualizes digital inclusion not as mere connectivity, but as socially embedded participation in digitally mediated environments. This shift is theoretically necessary because access alone does not guarantee meaningful engagement. As van Dijk [6] demonstrates, digital inequality persists across multiple levels, including skills, usage, and outcomes. Helsper [12] further shows that digital engagement is deeply intertwined with broader social inequalities, rather than being an independent domain.

From this perspective, digital inclusion should be understood as a process through which individuals gain the capacity to access, use, and benefit from digital resources within specific socio-economic contexts. Crucially, this process is not technologically determined; it is mediated by education systems, institutional support, and patterns of social stratification. Therefore, digital inclusion is both an enabling condition for development and a site where inequality can be reproduced.

3.3. Human Capital as Institutional Capability

While traditional human capital theory emphasizes individual investment in education and skills [9], this study adopts a broader conceptualization in which human capital is understood as institutionally conditioned capability. This shift reflects the recognition that

skills are not merely acquired at the individual level but are produced, distributed, and utilized within institutional systems.

In the context of digital transformation, the value of human capital depends not only on the presence of skills but on their alignment with evolving technological and economic structures. Education systems, labor market institutions, and governance frameworks play a critical role in determining whether skills can be effectively mobilized. Where such systems are inclusive and adaptive, human capital can enhance digital participation and contribute to broader development outcomes. Where they are fragmented or unequal, however, human capital may become polarized, reinforcing existing disparities.

3.4. Institutional Mediation and Developmental Outcomes

The central proposition of this framework is that the relationship between digital inclusion, human capital, and national well-being is institutionally mediated. Institutional structures - understood as formal policies, governance mechanisms, and informal norms - shape both the distribution of digital resources and the formation of human capabilities.

This perspective aligns with the broader literature on institutional economics, which emphasizes that development outcomes are contingent upon the inclusiveness of institutions [13]. In inclusive institutional environments, digital inclusion and human capital can operate in a mutually reinforcing manner, expanding opportunities and enhancing collective well-being. In contrast, in contexts characterized by institutional asymmetries, these same processes may produce divergent or even contradictory outcomes.

For transitional economies such as Vietnam, this mediation is particularly significant. Rapid digital expansion occurs alongside evolving institutional frameworks, creating conditions in which opportunities for inclusion coexist with risks of exclusion. The effectiveness of digital transformation in promoting well-being therefore depends not only on technological adoption but on the capacity of institutions to ensure equitable access, capability formation, and meaningful participation.

3.5. Conceptual Model and Propositions

Based on the above arguments, this study proposes a relational framework in which digital inclusion and human capital interact dynamically within an institutional context to shape national well-being. Rather than a unidirectional relationship, the model emphasizes mutual causation and conditional outcomes.

Three propositions are derived:

Proposition 1: Digital inclusion contributes to national well-being only when institutional conditions enable equitable access and meaningful participation.

Proposition 2: Digital inclusion and human capital form a mutually reinforcing but asymmetrical relationship, in which each can both enable and constrain the effectiveness of the other.

Proposition 3: In transitional economies, unresolved institutional asymmetries may transform digital expansion into a mechanism of social stratification rather than inclusive development.

The diagram illustrates the co-constitutive relationship between digital inclusion and human capital (Proposition 2). This interaction is mediated by institutional arrangements (the institutional filter), which determine whether the outcome leads to enhanced national well-being (Proposition 1) or risks of social stratification in transitional contexts (Proposition 3).

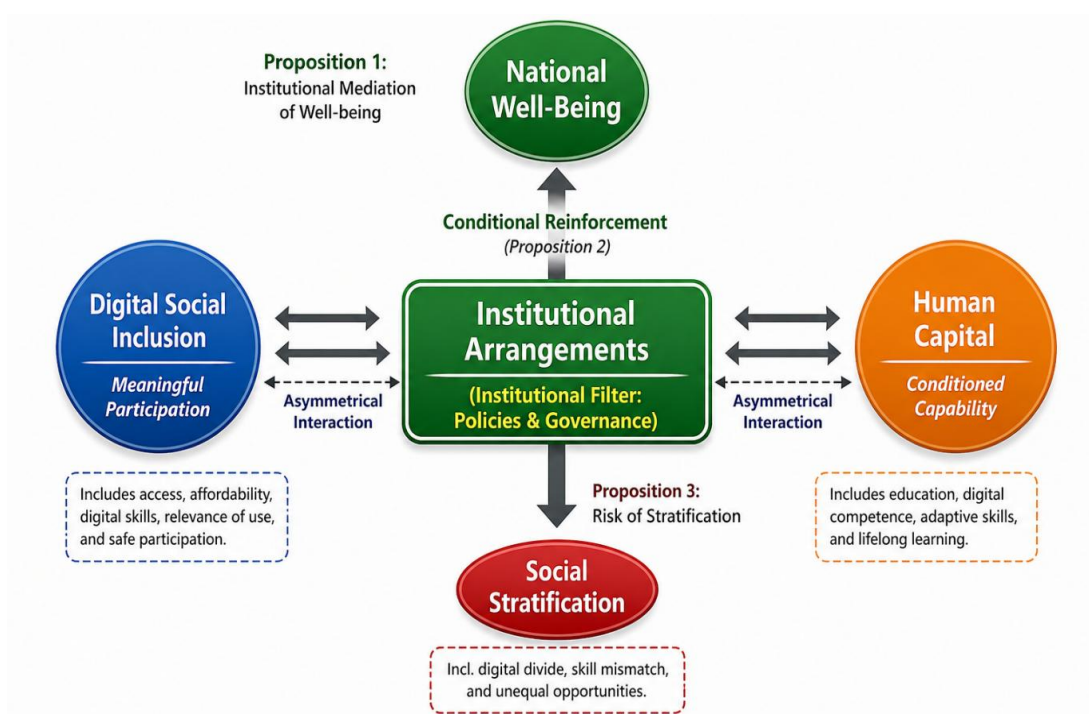


Figure 1. The Dialectical Institutional Framework of Digital Transformation

Source: Author's compilation based on World Bank [4], UNDP [5], OECD [11] and national statistics.

3.6. Theoretical Implications

This framework can be further clarified in relation to existing institutional approaches. Unlike North's new institutional economics, which focuses on efficiency and formal rules as determinants of economic performance, the present framework emphasizes relational and dynamic interactions between digital inclusion and human capabilities, highlighting how institutional arrangements mediate not only efficiency but also distributive outcomes.

Similarly, while Hall and Soskice's varieties of capitalism categorize institutional systems into relatively stable typologies, they do not fully capture the transformative and uneven dynamics introduced by rapid digitalization in transitional economies. In contrast, the dialectical institutional framework proposed here focuses on process, contradiction, and conditionality, rather than static institutional configurations.

This framework advances the literature in three key ways. First, it moves beyond linear models by introducing a dialectical understanding of digital transformation as a process characterized by both complementarity and contradiction. Second, it reconceptualizes human capital and digital inclusion as relational and institutionally embedded processes rather than isolated variables. Third, it situates national well-being as an outcome that is contingent upon the interaction between these processes, rather than a direct product of economic growth or technological expansion.

By integrating these dimensions into a unified analytical model, the study provides a theoretical foundation for examining digital transformation in transitional economies, where institutional conditions play a decisive role in shaping development trajectories.

4. METHODOLOGY

4.1. Research Design

This study adopts a qualitative research design grounded in theoretical synthesis and secondary data analysis to examine the relationship between digital social inclusion, human capital, and national well-being. Rather than testing causal relationships through primary data collection, the research aims to develop an integrated conceptual framework that captures the relational and institutionally mediated nature of these phenomena.

This approach is particularly appropriate given the complexity of the research problem. Digital inclusion, human capital, and well-being are not discrete variables but interdependent processes embedded within broader socio-institutional structures. Accordingly, the study prioritizes analytical generalization over statistical inference, seeking to contribute to theory-building rather than hypothesis testing.

4.2. Literature Selection Strategy

To ensure methodological transparency and rigor, the study employs a structured and replicable approach to literature selection.

Relevant literature was identified through keyword-based searches in major academic databases, including Scopus, Web of Science, and Google Scholar. Core search terms include: “digital inclusion”, “digital inequality”, “human capital”, “national well-being”, “inclusive development”, and “digital transformation”. These keywords were used both independently and in combination to capture interdisciplinary perspectives across development studies, sociology, and information science.

The search process was iterative, allowing for the inclusion of seminal works as well as recent contributions that reflect the evolving dynamics of digital transformation.

4.3. Inclusion Criteria and Source Selection

The selection of literature follows three main criteria to ensure both analytical rigor and relevance.

First, academic credibility is prioritized. Only peer-reviewed journal articles, scholarly books, and reports from reputable international organizations [14] are included to ensure reliability and methodological consistency.

Second, temporal relevance is considered. Priority is given to publications from 2010 to 2025 in order to capture both foundational theoretical contributions and recent empirical developments related to digital transformation and inclusive development.

Third, analytical relevance guides the selection process. Sources are included only if they contribute directly to at least one of the study’s three core dimensions - digital inclusion, human capital, or national well-being - with particular emphasis on works that address their interaction. This multi-criteria approach ensures both depth and coherence in theoretical synthesis.

Importantly, the analysis does not treat all sources as equally weighted. Greater analytical weight is assigned to peer-reviewed studies and datasets produced by international organizations due to their methodological rigor and cross-context comparability. In contrast, secondary reports and descriptive sources are used primarily for contextual illustration. The evaluation of evidence is based on three criteria: (1) credibility of the source, (2) consistency across multiple sources and (3) relevance to the study’s analytical framework. This weighting strategy enhances the transparency and robustness of the synthesis.

4.4. Bias Mitigation and Interdisciplinary Integration

To reduce potential selection bias, the study adopts an interdisciplinary approach, integrating literature from multiple fields, including development economics, sociology, and information studies. This strategy helps avoid over-reliance on a single theoretical tradition and allows for a more comprehensive understanding of the research problem.

In addition, contrasting perspectives are intentionally incorporated, including both optimistic and critical accounts of digital transformation, to ensure analytical balance and avoid normative bias.

4.5. Analytical Strategy: Structured Narrative Synthesis with Abductive Elements

The analysis follows an abductive research strategy, combining elements of structured narrative review with iterative theoretical refinement. Rather than applying a predefined theoretical model, the study engages in a continuous dialogue between theory and evidence, allowing patterns observed in the literature and the Vietnamese context to inform the refinement of the conceptual framework. This abductive approach is consistent with the “systematic combining” methodology proposed by Dubois and Gadde [14], which emphasizes an iterative process between theoretical frameworks and empirical observations. Rather than applying a fixed model, the research design allows for continuous refinement of concepts in response to emerging patterns in the data and literature.

The analytical process consists of three stages:

Stage 1: Thematic structuring. Literature and data are organized into three analytical domains: digital inclusion, human capital, and national well-being. This step facilitates the identification of key concepts and patterns within each domain.

Stage 2: Comparative interpretation. Findings across different sources are compared to identify convergences, divergences, and contradictions. This step enables the transition from descriptive synthesis to explanatory insight.

Stage 3: Theoretical integration. Insights from the previous stages are synthesized into a unified framework that explains how digital inclusion and human capital interact under institutional conditions to shape well-being outcomes.

This abductive approach is particularly suitable for analyzing complex, context-dependent, and institutionally embedded phenomena.

4.6. Case Selection: Vietnam as a Critical Case

Vietnam is selected as a critical case of a market-oriented transitional economy undergoing rapid digital transformation. The country combines significant progress in digital infrastructure and economic growth with persistent challenges in human capital development and institutional capacity.

Following the logic of case-oriented research, the selection is intended not for statistical generalization but for analytical generalization, where insights derived from the Vietnamese context contribute to broader theoretical understanding of digital transformation in the Global South.

4.7. Validity and Limitations

To enhance analytical validity, the study employs data triangulation, drawing on multiple sources, including international datasets, national reports, and scholarly literature. This approach increases the robustness of the findings by cross-validating evidence across different domains.

However, several limitations should be acknowledged. *First*, the reliance on secondary data constrains the ability to capture micro-level experiences and causal mechanisms. *Second*, variations in data collection methodologies across sources may affect comparability. *Third*, the qualitative design limits the potential for statistical generalization. Despite these limitations, the methodology is appropriate for the study's objective of theory development and conceptual integration, providing a solid foundation for future empirical research.

This methodological design ensures both theoretical rigor and contextual relevance, enabling the study to bridge abstract conceptualization and real-world developmental dynamics.

5. ANALYSIS AND DISCUSSION

5.1. Digital Inclusion in Vietnam: Expansion without Full Participation

According to the World Bank [4], internet penetration in Vietnam has reached approximately 77% of the population. However, this aggregate figure masks significant disparities: internet usage exceeds 85% in urban areas, compared to only around 65–68% in rural regions, indicating a persistent access and quality gap between regions. ITU [2] further highlights that disparities in digital skills and effective usage remain substantial, even among connected populations.

Empirical evidence indicates that Vietnam has achieved substantial progress in expanding digital access, with high rates of internet penetration and rapid diffusion of mobile technologies. However, from the perspective of the proposed framework, this expansion should not be interpreted as synonymous with digital inclusion. Rather, it represents only the first layer of a multi-dimensional process.

The critical issue lies in the uneven distribution of effective digital participation. While connectivity has become widespread, significant disparities persist in digital skills, usage intensity, and the ability to leverage digital technologies for socio-economic advancement. This pattern aligns with van Dijk's [6] multi-level model of digital inequality, which demonstrates that access does not eliminate inequality but instead shifts it to higher-order dimensions such as skills and outcomes.

In the Vietnamese context, this implies that digital inclusion remains structurally incomplete. The expansion of infrastructure has outpaced the development of capabilities necessary for meaningful participation. Consequently, digitalization has created a condition of "formal inclusion but substantive inequality", where individuals are connected but not equally empowered. This finding provides empirical grounding for Proposition 1, suggesting that digital inclusion contributes to well-being only when participation is institutionally enabled, not merely technologically facilitated.

For example, Vietnam's National Digital Transformation Program and initiatives such as the development of e-government platforms and digital public service portals have expanded access to administrative services and information. In addition, the promotion of digital payments and mobile platforms has facilitated broader participation in the digital economy. However, the benefits of these initiatives remain uneven, as differences in digital skills, education quality, and local institutional capacity constrain effective usage, particularly in rural and less-developed regions.

5.2. Human Capital Constraints: Capability Formation under Structural Conditions

Parallel to the expansion of digital infrastructure, Vietnam has made notable progress in education and workforce development. However, recent estimates suggest that fewer than 30% of the workforce possess intermediate or advanced digital skills required for knowledge-based

sectors [4], highlighting a significant capability gap. OECD [11] also points to uneven access to lifelong learning systems, particularly in rural and less-developed regions.

The evidence suggests a persistent gap between formal educational attainment and the skills required in a digital economy, particularly in areas such as advanced digital literacy, problem-solving, and adaptive learning. This mismatch reflects a broader issue identified in the literature: human capital formation is not simply a function of individual investment but is deeply shaped by institutional systems, including education quality, training infrastructure, and labor market integration [7], [9].

From the standpoint of the proposed framework, this gap signifies that human capital in Vietnam remains partially decoupled from digital transformation. While educational expansion has increased the quantity of human capital, its qualitative alignment with digital demands remains uneven. As a result, the capacity of individuals to convert digital access into economic and social opportunities is constrained.

This reinforces Proposition 2, highlighting that the relationship between digital inclusion and human capital is not automatically synergistic. Instead, it is conditional and potentially asymmetrical, depending on whether institutional systems effectively align skill formation with technological change.

5.3. Vietnam as a Structurally Uneven Digital Transition: A Deeper Insight

Beyond aggregate indicators of digital expansion, the Vietnamese case reveals a structurally uneven pattern of digital transformation that illustrates the core argument of this study. For instance, over 70% of digital economy activities are concentrated in major urban centers such as Hanoi and Ho Chi Minh City [3], while UNDP [5] reports that access to advanced digital services and skills training remains significantly more limited in rural regions.

This uneven distribution reflects a persistent urban–rural divide that shapes access to digital opportunities. Major urban centers benefit from more advanced digital infrastructure, higher-quality education systems, and stronger integration into knowledge-based labor markets. In contrast, rural and peripheral regions face constraints not only in connectivity quality but, more critically, in digital skills acquisition and institutional support mechanisms. This results in a divergence between formal access and substantive capability.

At the same time, the Vietnamese labor market reflects a growing mismatch between educational attainment and digital skill requirements. While the expansion of formal education has increased the overall stock of human capital, the capacity of workers to engage in digitally intensive and knowledge-based sectors remains uneven. This gap is particularly visible in the limited supply of advanced digital skills, adaptive learning capacities, and problem-solving competencies required in the evolving digital economy.

These structural asymmetries illustrate a key mechanism identified in the proposed framework: digital expansion without corresponding institutional alignment may reinforce stratification rather than inclusion. Individuals and regions with stronger pre-existing advantages such as higher education levels, better institutional access, and proximity to economic centers are better positioned to convert digital connectivity into socio-economic gains. Conversely, those lacking such conditions remain at the margins of digital transformation despite being formally connected.

Thus, the Vietnamese case does not merely exemplify digital transformation in a transitional economy; it reveals the conditional and uneven nature of inclusion, where the interaction between digital infrastructure, human capital formation, and institutional capacity determines whether digitalization leads to convergence or divergence in well-being outcomes.

Table 1. Digital Inclusion, Human Capital, and Well-being in Vietnam

Dimension	Indicator	Vietnam (Recent Data)	Observed Pattern	Analytical Implication	Source
Digital Inclusion	Internet penetration	~75–77% population	High access	Access ≠ inclusion	[4]
	Smartphone usage	>70% users	Rapid diffusion	Technology widely available	[2]
	Digital skills	Uneven (urban > rural)	Capability gap	Limits effective participation	[2]; [5]
Human Capital	Education attainment	High basic education	Strong foundation	Quantity > quality issue	[5]
	Digital workforce skills	Limited advanced skills	Skill mismatch	Weak alignment with digital economy	[4]
	Lifelong learning access	Uneven	Institutional constraint	Slows capability upgrading	[11]
Well-being	HDI	Upper-middle range	Improving	Growth-driven gains	[5]
	Inequality (Gini)	Moderate but persistent	Structural disparity	Unequal benefit distribution	[4]
	Quality employment	Uneven access	Labor segmentation	Stratification risk	[4]
Institutional Context	Digital policy	Strong state-led programs	High commitment	Top-down expansion	[4]
	Regional governance	Uneven capacity	Implementation gap	Institutional asymmetry	[5]

Source: Author's compilation based on World Bank [4], pp. 22–40), UNDP [5], pp. 88–105), OECD [11], and ITU [2].

Table 1 illustrates the structural mismatch between digital expansion, human capital formation, and well-being outcomes in Vietnam. While access to digital technologies has expanded rapidly, disparities in skills, institutional capacity, and labor market integration continue to constrain the translation of connectivity into inclusive development.

5.4. Institutional Mediation: The Missing Link

The interaction between digital inclusion and human capital cannot be adequately understood without considering the mediating role of institutions. In Vietnam, digital transformation has been strongly supported by state-led initiatives, yet institutional capacity remains uneven across regions and sectors. For example, the National Digital Transformation Program has expanded e-government services and digital public platforms, but disparities in local implementation capacity continue to shape unequal access and usage across regions.

Institutional mediation operates through multiple channels. *First*, it shapes the distribution of digital resources, influencing who gains access to infrastructure and services. *Second*, it affects the formation of human capital through education systems, training programs, and labor market policies. *Third*, it determines the extent to which individuals can translate digital participation into tangible outcomes, such as employment, income, and social mobility.

This multi-layered mediation aligns with the institutional perspective advanced by Acemoglu and Robinson [13], who argue that inclusive institutions are critical for ensuring that economic and technological changes generate broad-based benefits.

In the absence of sufficiently inclusive institutional arrangements, digital transformation may amplify existing inequalities. In Vietnam, disparities between urban and rural areas, differences in educational quality, and variations in local governance capacity illustrate how institutional asymmetries can shape the outcomes of digitalization.

Thus, the findings support the core argument of the framework: institutions are not background conditions but active mediators that determine whether the interaction between digital inclusion and human capital leads to inclusive development or stratified outcomes.

5.5. Interaction Dynamics: Complementarity and Contradiction

A key contribution of this study lies in revealing that the relationship between digital inclusion and human capital is not purely complementary but also inherently contradictory.

On the one hand, digital inclusion can enhance human capital by providing access to information, online education, and new forms of knowledge production. On the other hand, without adequate skills, digital access may remain underutilized or even exacerbate inequalities, as those with higher capabilities are better positioned to benefit from digital opportunities.

This duality reflects a dialectical relationship, in which digital inclusion and human capital simultaneously reinforce and constrain each other. The outcome of this interaction is therefore contingent rather than predetermined.

In Vietnam, this dynamic is evident in the coexistence of rapid digital expansion and persistent skill gaps. While digital technologies create new opportunities for learning and employment, they also increase the premium on advanced skills, thereby widening the gap between different segments of the population.

This finding extends existing literature by demonstrating that the interaction between digital inclusion and human capital is structurally conditional, rather than universally positive. It also provides further support for Proposition 2, emphasizing the asymmetrical and context-dependent nature of this relationship.

5.6. Stratification Risk: Digital Transformation and Social Inequality

One of the most significant implications of the analysis is the identification of a stratification risk associated with digital transformation in transitional economies.

As digital technologies become more deeply embedded in economic and social systems, they increasingly function as mechanisms of differentiation. Individuals and groups with higher levels of human capital and better institutional access are able to leverage digital resources more effectively, while others remain marginalized despite formal connectivity.

This pattern is consistent with the broader argument that technological change can reinforce existing inequalities if not accompanied by inclusive institutional frameworks [10].

In the Vietnamese context, the risk of stratification is particularly salient due to ongoing structural transformation. The combination of rapid digitalization and uneven institutional development creates conditions in which digital expansion may lead not to convergence, but to divergence in socio-economic outcomes.

This directly supports Proposition 3, indicating that in transitional economies, digital transformation may act as a mechanism of stratification rather than inclusion unless institutional asymmetries are addressed.

5.7. Theoretical Implications

The findings of this study contribute to the literature in several important ways. *First*, they challenge linear models of digital development by demonstrating that digital inclusion does not automatically lead to improved well-being. *Second*, they reconceptualize human capital as an institutionally embedded capability rather than a purely individual attribute. *Third*, they highlight the central role of institutions in mediating the relationship between technology and development outcomes.

Most importantly, the study advances a relational understanding of development, in which digital inclusion, human capital, and well-being are interconnected processes shaped by structural conditions. This perspective provides a more nuanced framework for analyzing digital transformation in transitional economies and offers a foundation for future empirical research.

6. CONCLUSION AND POLICY IMPLICATIONS

6.1. Conclusion

This study set out to address a central limitation in existing scholarship: the fragmented treatment of digital inclusion, human capital, and national well-being as separate domains. By developing a dialectical institutional framework, the research reconceptualizes these elements as interdependent processes whose interaction is contingent upon institutional conditions.

The findings challenge the prevailing assumption that digital transformation inherently leads to inclusive development. While Vietnam has achieved significant progress in expanding digital infrastructure and accelerating economic growth, these advancements do not automatically translate into improved societal well-being. Instead, the analysis demonstrates that digital inclusion remains incomplete when it is confined to access, and that human capital formation, if insufficiently aligned with digital transformation, limits the capacity of individuals to convert connectivity into meaningful opportunities.

More importantly, the study highlights the central role of institutional mediation. Institutions are not passive backdrops but active mechanisms that shape how digital resources are distributed, how capabilities are formed, and how participation translates into developmental outcomes. Where institutions are inclusive and adaptive, digital inclusion and human capital can reinforce each other, contributing to broader well-being. Conversely, where institutional asymmetries persist, digital transformation may exacerbate inequality and function as a mechanism of social stratification.

By situating digital transformation within a relational and institutional framework, this study contributes to a more nuanced understanding of development in transitional economies. It shifts the analytical focus from technological expansion to the conditions under which technology becomes socially meaningful, thereby extending existing debates on inclusive development beyond technocratic growth paradigms.

6.2. Policy Implications

The findings carry several important implications for policymakers seeking to promote inclusive and human-centered digital transformation.

First, digital policy should move beyond an infrastructure-centric approach toward a capability-oriented strategy. Expanding connectivity, while necessary, is insufficient. Policymakers must prioritize the development of digital skills, critical thinking, and adaptive learning capacities across the population. This requires sustained investment in education systems, lifelong learning frameworks, and accessible training programs that are responsive to the evolving demands of the digital economy.

Second, human capital policy must be institutionally aligned with digital transformation. The mismatch between educational outcomes and labor market requirements suggests the need for closer coordination between education providers, industry actors, and government agencies. Policies should focus not only on increasing educational attainment but also on enhancing the relevance and applicability of skills, particularly in areas related to digital technologies and knowledge-based work.

Third, addressing inequality requires strengthening institutional inclusiveness. Regional disparities, differences in access to quality education, and uneven governance capacity must be explicitly targeted through redistributive and place-based policies. Without such interventions, digital transformation risks reinforcing existing socio-economic divides rather than mitigating them.

Fourth, policymakers should recognize that digital transformation is inherently a social process, not merely a technological one. This implies the need for governance frameworks that promote equitable participation, protect vulnerable groups, and ensure that digital systems are designed with inclusivity in mind. Public digital platforms, for instance, should be accessible, user-centered, and responsive to diverse socio-economic contexts.

Finally, a shift toward well-being-oriented development metrics is necessary. Rather than evaluating digital transformation solely in terms of economic growth or technological adoption, policymakers should incorporate multidimensional indicators that capture quality of life, social inclusion, and long-term resilience. Such an approach would provide a more comprehensive basis for assessing the societal impact of digital policies.

6.3. Limitations and Future Research

Despite its contributions, this study is subject to several limitations. The reliance on secondary data constrains the ability to capture micro-level experiences and causal mechanisms. In addition, differences in data sources and measurement frameworks may affect comparability across contexts.

Future research should extend this work by employing quantitative methods to test the proposed framework across multiple countries, as well as by conducting in-depth case studies to explore how digital inclusion and human capital interact in specific institutional settings. Comparative analyses between different transitional economies would be particularly valuable in identifying patterns and variations in development trajectories.

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